Attachment 9. Water Quality and Other Expected Benefits

Overview

The San Francisquito Creek Flood Protection and Ecosystem Restoration Capital Improvement Project (East Bayshore Road to San Francisco Bay) would increase stream flow capacity in San Francisquito Creek from the downstream face of East Bayshore Road to San Francisco Bay. It would reduce local flood risks during storm events, as well as provide the capacity needed for upstream flood protection projects being planned by the San Francisquito Creek Joint Powers Authority (SFCJPA). Increasing the Creek's flow capacity from San Francisco Bay to Highway 101 would be achieved by widening the Creek channel within the reach to convey peak flows for 100-year storm events, removing an un-maintained levee-type structure downstream of Friendship Bridge to allow flood flows from the Creek channel into the Palo Alto Baylands Preserve north of the Creek, and configuring flood walls in the upper part of the reach for consistency with structure for Caltrans' enlargement of the Highway 101/East Bayshore Road Bridge over San Francisquito Creek. Project elements include flood walls in the upper project reach downstream of East Bayshore Road, levee setbacks and creek widening in the middle reach between East Palo Alto and the Palo Alto Municipal Golf Course, and an overflow terrace at a marsh elevation along the Baylands Preserve.

The proposed project is Phase 1 of the full, two-phased project. Phase 1 involves creating a new setback levee and excavating the levee on the Santa Clara side, breaching the northern-most levee, as well as excavation of fluvial sediments from marshplain elevation throughout the Phase 1 and Phase 2 project reaches. . Phase 2, to be completed at a later date, will include implementation of a new floodwall in the upstream portion of the project reach and a tie-in to Caltrans enlargement of the Highway 101/East Bayshore Road Bridge over San Francisquito Creek.

The project costs and avoided damages estimated in this attachment are limited to those damages that would be avoided through implementation of the Phase 1 project. Potential costs and benefits associated with Phase 2 of the project have not been included. As a result, all of the estimated benefits identified herein would be realized through implementation of Phase 1 as a stand-alone project, and do not depend upon implementation of future project phases.

Project costs and benefits are summarized in Table 9-1, below. Flood damage reduction benefits are provided in Attachment 7, and water supply benefits are described in further detail in Attachment 8.

Table 9-1: Benefit-Cost Analysis Overview

	Present Value
Costs – Total Capital and O&M	$16,858,498
Monetizable Benefits	
Flood Damage Reduction (Attachment 7)	$20,083,637
Water Supply Benefits (Attachment 8)	N/A
Water Quality and Other Benefits	$14,227,936
Total Monetized Benefits	$34,311,573
Qualitative Benefit or Cost	**Qualitative indicator***
Water Supply Benefits (Attachment 8)	N/A
Water Quality and Other Benefits	N/A
Improved In-Stream Water Quality	+
Surface Water Quality Protection	+
Enhanced Recreational Opportunities	+
Enhanced Public Health Protection	++
Reduced Street Maintenance Requirements	+

O&M = Operations and Maintenance

* Direction and magnitude of effect on net benefits:

+ = Likely to increase net benefits relative to quantified estimates.

++ = Likely to increase net benefits significantly.

– = Likely to decrease benefits.

– – = Likely to decrease net benefits significantly.

U = Uncertain, could be + or –.

Description of Without-Project Conditions

Under existing conditions, tidal marshland habitat and pickleweed habitat are present but are limited to small spatial in-channel elevations due to accumulated fluvial sediments within the leveed channel throughout the project reach. The ideal elevation for these habitats is at mean higher high water, or a range between the average daily high tides. The area within the channel that currently provides for this elevation range, which remains wet due to tidal action on a daily basis, provides important critical habitat for a range of native biota, in particular, the listed salt marsh harvest mouse and California clapper rail. High quality harvest mouse and clapper rail habitats exist in the Faber Tract, the baylands area just north of the channel, but are separated from the creek channel by an unmaintained levee that runs along the north side of the channel from the Friendship Bridge to the creek mouth at San Francisco Bay. The channel also serves as a migratory corridor for adult and smolt steelhead. The narrow channel and resulting high velocities limit the opportunity for adult steelhead to pass upstream to spawning

areas in the upper watershed during high flow events, the very events that provide for passage upstream of the project reach.
Currently, bicycle and pedestrian trails are accommodated by the existing levees on both the East Palo Alto and Palo Alto side of the channel throughout the phase 1 project reach. The trail on the Palo Alto side constitutes a portion of the Bay Trail, and is paved for pedestrian and bicycle use, as well as access for maintenance vehicles. The trail on the East Palo Alto side is simply the compacted earth levee crown, but is used by pedestrians primarily when dry. The levee crown width is a maximum of 12 ft on either side, providing easy two-way traffic for pedestrians, but limited two-way traffic for bicyclists, people walking dogs, or maintenance vehicles.

Description of Expected Water Quality and Other Benefits with Project

The project will generate significant water quality and ecosystem benefits, including reduced sedimentation, creation of new habitat for sensitive species, and improved recreational opportunities. These benefits are described in further detail below.

Water Quality Benefits

Water quality benefits attributable to the project include enhanced in-stream water quality and surface water quality protection. These benefits are described in the following paragraphs.

Enhanced In-Stream Water Quality

The new channel design is expected to result in reduced sedimentation throughout the reach, which will generate a reduction in suspended solids within the reach. The magnitude of this benefit is currently unclear; as such, this benefit has not been monetized.

Surface Water Quality Protection

Implementation of this project will reduce flood-related debris and pollutant loading in San Francisquito Creek and the San Francisco Bay. Currently, flood waters leaving the creek channel pass through urbanized areas, where they are likely to become degraded and contaminated with debris, as well as water quality parameters including bacteria, nutrients, floating material, mercury, oil and grease, pesticides, salinity, sediment, settleable material, suspended material. The O'Connor Pump Station forebay is located within the inundation area. During flood events, water in this forebay receives increased loading of a variety of contaminants. The O'Connor Pump Station pumps water from the forebay back to San Francisquito Creek. As such, the debris and contaminants introduced into the flood waters as they flow through an urbanized area are then returned to San Francisquito Creek, where they may degrade creek water quality and pose a threat to aquatic species and sensitive habitats. The project will completely eliminate flooding through the 100-year fluvial event coincident with the 100-year high tide, taking into account a potential 26-inch rise in sea level over the next 50 years. As such, the project will provide a significant water quality benefit by preventing transport of debris and contaminants from urbanized areas to the San Francisquito Creek during flooding events.

Further, the project will provide water quality protection for the San Francisco Bay. According to Volume II of the *Final Report on San Francisquito Creek Hydraulic Modeling and Floodplain Mapping (Floodplain Modeling and Mapping)*, which was prepared for the U.S. Army Corps of Engineers in

January of 2010, during the 250- and 500-year flood events, significant volumes of flood waters leave the floodplain and are discharged to San Francisco Bay (385 acre-feet and 974 acre-feet, respectively). As described previously, these flood waters flow through urbanized areas, where they are likely to become degraded and contaminated with debris as well as water quality contaminants such as bacteria, nutrients, floating material, mercury, oil and grease, pesticides, salinity, sediment, settleable material, suspended material. The San Francisco Bay is currently listed as impaired for constituents expected to be found in degraded floodwaters flowing through urbanized areas. Although the project is not designed to the 250- or 500-year storm, it is conservatively designed for the 100-year event. Even if overtopping does occur during these events, the quantity of water leaving the channel is expected to be significantly less than under the without project condition, and it is possible that the floodwaters may be contained within the floodplain. As a result, the project is expected to reduce pollutant loading – including mercury, copper, and other constituents of particular concern - to the San Francisco Bay during major flood events.

Other Benefits

In addition to improving water quality in San Francisquito Creek by reducing sedimentation, the project will provide important ecologic and recreational benefits, as described below.

Habitat Creation and Restoration

The project will create increased tidal marshland habitat (within new channel) at appropriate elevations for intertidal wetland plant and animal species. As shown in the project plans included with Attachment 3, the project is expected to create approximately 16.1 acres of new or improved Mid-Marsh habitat, and an estimated 4.0 acres of new or improved Low-Marsh habitat.

The conversion of low quality floodplain terrace habitat (dominated by non-native, perennial pepperweed) to higher quality marshplain habitat dominated by native tidal salt and brackish marsh species is the key element to the restoration goals of the project. This will be accomplished by increasing the tidal prism, thereby increasing the summertime salinities in the project reach and via the excavation of new marshplains to elevations that will facilitate colonization by tidal salt marsh plant species and deter colonization by ruderal species (e.g. perennial pepperweed).

Another benefit will be the restoration of high tide refugial habitat for sensitive wildlife species at the ecotone between tidal wetland and upland habitats. This will be accomplished via a combination of grading (e.g. levee lowering and grading of stable inboard levee slopes), topsoil preparation, and active revegetation. The restoration of intermediate fluvial flooding to the Faber Tract through the lowering of a portion of the unmaintained levee north of the channel will provide new connectivity between the high quality baylands habitat and the improved marshplain habitat within the channel. This natural process has been blocked by the levee, and should also help restore a sediment source to over time assist the marshplain in responding to sea level rise. Widening the channel and restoring the historic connection to the Faber Tract will increase the interface distance between the freshwater environment of the creek channel and the salt water in San Francisco Bay, allowing for a longer acclimation period for migrating steelhead entering or leaving the creek.

It is difficult to assign a value for habitat creation and restoration. The San Francisco Bay area is home to 500 species of wildlife, 128 of them threatened or endangered, like the California clapper rail and salt marsh harvest mouse. The Bay is a crucial resting spot for millions of migrating birds, and its sheltered

waters provide critical nurseries for fish. (www.savesfbay.org/greening-bay). Estuary wetlands sustain over 60 plant and animal species that are listed as rare, threatened or endangered or are candidates for such listing. Of the animal species, the California clapper rail, California least tern, and salt marsh harvest mouse are best known due to their presence on several bayshore properties proposed for development; this project would provide suitable habitat for the salt marsh harvest mouse and the California clapper rail.

A well-regarded technique for assigning value to habitat for wetlands is Willingness to Pay. A 2009 report prepared by EPA *entitled The Economic Value of Coastal Ecosystems in California* (Raheem et al, 2009) summarizes ecosystem service values found by surveying available willingness-to-pay information and studies worldwide. This summary presents ecosystem service values for individual ecosystem functions (where available), as well as for bundled services (assumed aggregate value) for estuarine and beach environments. The range of values for estuarine environments was found to range from $50,000 - $80,000 per acre per year, and beaches range from $36,000 - $83,000 per acre (2008 USD). Specific values for marsh habitat were not provided.

Based on these data points, the value of the wetlands created and restored by this project is conservatively estimated at $50,000 per acre per year (2009 USD). This translates to an ecosystem services benefit of $1,005,000per year with project implementation, or approximately $14,227,936 over the 50-year project life.

Enhanced Recreational Opportunities

The project will take advantage of bike/pedestrian plans and connect existing paths within and between the cities and counties, thus providing local residents with the public health and other benefits of recreation, and greatly improve connectivity between their employment, economic, and civic centers, schools, parks, and other vital facilities**.** It will also connect to the San Francisco Bay Trail, and replace the without-project pedestrian and bicycle trails along the length of the levees to be replaced or modified, but the new levees will accommodate higher traffic due to increased width (16ft) along the crown of the levees. Additional width of the paved or gravel trails will be created at strategic locations to provide pull out points for pedestrians or bicyclists to let maintenance vehicles travelling along the levee to pass. Benches and interpretive panels will be placed at the footing of the existing Friendship Bridge on the East Palo Alto side, on the new “island” created at the existing south footing of the Friendship Bridge, and on the new levee on the Palo Alto side.

Information related to current use of existing recreational facilities is limited; as a result, the economic value of enhanced recreational opportunities cannot be quantified.

Enhanced Public Health Protection

In addition to providing water quality, habitat and recreation benefits, this project will improve public health protection by eliminating exposure to degraded flood waters. Currently, this disadvantaged community experiences periodic severe flooding. According to the World Health Organization (WHO), there is an increased risk of infection of waterborne diseases when direct contact occurs with polluted flood waters through wound infections, dermatitis, conjunctivitis, and ear, nose and throat infections. One epidemic-forming disease that may be contracted from body contact with flood waters is leptospirosis, a bacterial disease. Leptospirosis may be transmitted through contact of the skin or mucous membranes with contaminated water, damp soil or vegetation or mud contaminated with

rodent urine. Flooding following rainfall assists in spreading the organism due to the proliferation of rodents which shed large amounts of leptospires in their urine. Leptospirosis outbreaks have occurred throughout the world, with a recent (2007) outbreak on a college campus in Oahu, HI following a flood event.

Even accidental ingestion of flood waters, or of water contaminated with flood waters, can cause a host of infections, ranging from mild to severe. A well-known example of disease outbreak following drinking water contamination occurred in Walkerton, Ontario in 2000 in which seven people died after consuming drinking water contaminated with E. coli. In 1999, a dormitory sewage pit on County Fairgrounds in New York caused a major outbreak of waterborne disease, killing two people and hospitalizing 71 others.

The risk of infection posed by contacting and/or ingesting flood waters is severe. By protecting this disadvantaged community from floods up to the 100-year event, this project will remove the real and immediate public health risks posed by exposure to degraded flood water quality.

Reduced Road Maintenance Requirements

As floodwaters recede, a significant volume is left behind in temporary ponds. The project will reduce ponding on streets and minimize the effect of moisture in creating potholes and cracks, which make up a significant portion of street maintenance costs.

Project Beneficiaries and Distribution of Benefits

This project will benefit stakeholders at the local and regional levels, as summarized in Table 9-2. This project benefits local and regional residents by providing enhanced recreational opportunities and rich wetlands resources. In addition, this project will provide appreciable statewidebenefits by creating and enhancing habitat for the listed salt marsh harvest mouse, California clapper rail and Steelhead.

Table 9-2: Project Beneficiaries Summary

Local	Regional	*Statewide*
Residents of East Palo Alto, Menlo Park, Palo Alto and the towns of Portola Valley and Woodside	Bay Area residents	***Salt Marsh Harvest Mouse and California Clapper Rail*** ***Central Coast ESU Steelhead*** ***San Francisco Bay***

Timing of Benefits

Project construction will be completed in 2013, and preparation for Phase 2 efforts will continue through 2014. For this analysis, a 50-year useful project life is assumed, thus benefits and costs are calculated through 2064 (50 years after the Phase 2 preparations are completed).

Summary of Qualitative Benefits

Qualitative benefits from the proposed project include (1) improved Creek water quality due to reduced sedimentation, (2) habitat creation and restoration, and (3) enhanced recreational opportunities. These benefits are summarized in Table 9-3.

Table 9-3: Qualitative Benefits Summary – Water Quality and Other Benefits

Benefit	Qualitative Indicator
Water Quality and Other Benefits	
Improved Water Quality	+
Enhanced Recreational Opportunities	+
Enhanced Public Health Protection	+
Reduced Street Maintenance Requirements	+

Uncertainty of Benefits

This analysis of costs and benefits is based on available data and some assumptions. As a result, there may be some omissions, uncertainties, and possible biases. In most cases, omissions lead to a downward bias in benefits: the project is expected to be much more beneficial than the subset of benefits that can be monetized would indicate. Several of these issues are listed in Table 9-4.

Table 9-4: Omissions, Biases, and Uncertainties, and Their Effect on the Project

Benefit or Cost Category	**Likely Impact on Net Benefits***	*Comment*
Value of Water Quality Improvements	+	The project is expected to provide water quality improvements by improving sediment transport. The value of these water quality improvements is unknown, and have therefore not been included in the quantification of benefits.
Value of Habitat Creation and Restoration	U	The economic value of habitat creation and restoration is difficult to quantify. Changes in the assumed per-acre value will change the estimated benefit value.
Value of Enhanced Recreational Opportunities	+	The economic value of enhanced recreational opportunities is unknown. As a result, this benefit has not been monetized.
Magnitude and Value of Surface Water Quality Protection Achieved	+	The project will reduce the introduction of contaminants to San Francisquito Creek and the San Francisco Bay. While it is likely that the reduction in contaminant loading during major storm events will be significantly reduced, the precise magnitude and value of this reduction is unknown. However, if a value could be assigned to these water quality improvements, the project benefits would be expected to significantly increase.
Value of Enhanced Public Health Protection	++	The probability of disease occurrence resulting from exposure to floodwaters is unknown. In its Stage 2 Disinfectant and Disinfectant By-Products Rule, the U.S. EPA estimates the value of a statistical life (VSL) at approximately $7.1 million, adjusted to 2005 dollars. More recently, EPA has updated its best estimate for VSL to $7.0 million (2006 USD). Even incremental reductions in risk of mortality and morbidity associated with exposure to contaminated floodwaters would be expected to significantly

		increase the project benefits.
Value of Reduced Street Maintenance	+	The current cost of street maintenance, and the reduction in maintenance costs associated with decreased flood occurrence, are currently unknown. However, any avoided maintenance costs would increase the total estimated project benefit.
Project costs	U	The calculation of the present value of costs is a function of the timing of capital outlays and a number of other factors and conditions. Changes in these variables will change the estimate of costs.

*Direction and magnitude of effect on net benefits:
+ = Likely to increase net benefits relative to quantified estimates.
++ = Likely to increase net benefits significantly.
– = Likely to decrease benefits.
– – = Likely to decrease net benefits significantly.
U = Uncertain, could be + or –.

Potential Adverse Effects

Adverse effects associated with project implementation are expected to be limited. Non-tidal seasonal wetland habitat is present between the Palo Alto Golf Course and the outboard levee slope of San Francisquito Creek. The project will both fill a portion of these wetlands (converting them to uplands) and convert a portion of these wetlands to tidal marsh. Although there will be a loss of non-tidal season wetlands resultant from the project, the new habitat created will be of much higher value as it will not be seasonal, and will maintain year-round connectivity to other high-quality habitat either created by or opened up by the project.

Documentation Supporting Benefits

- Northwest Hydraulic Consultants Inc. Final Report, San Francisquito Creek Hydraulic Modeling and Floodplain Mapping, Volume II: Floodplain Modeling and Mapping. Prepared for the U.S. Army Corps of Engineers San Francisco District, January 22, 2010.
- Raheem, N., J. Talberth, S. Colt, E. Fleishman, P. Swedeen, K. J. Boyle, M. Rudd, R. D. LOPEZ, T. O'Higgins, C. Willer, AND R. M. Boumans. The Economic Value of Coastal Ecosystems in California. U.S. Environmental Protection Agency, Washington, DC, EPA/600/F-09/046, 2009.

Economic Benefit Tables

Habitat creation and restoration benefits are summarized in DWR Table 19. Habitat creation and restoration benefits are estimated as $805,000 per year. Over the 50-year project life, this corresponds to a present value benefit of $11,396,506.

DWR Table 19: Water Quality and Other Expected Benefits
San Francisquito Creek Flood Protection and Ecosystem Restoration Capital Improvement Project

Year		Measure of Benefit						Without Project	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Type of Benefit	Measure of Benefit	Without Project	With Project	Change Resulting from Project	Unit $ Value	Annual $ Value	Discount Factor	Discounted Benefits
2009					0		$0	1.000	$0
2010					0		$0	0.943	$0
2011					0		$0	0.890	$0
2012	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.840	$843,817
2013	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.792	$796,054
2014	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.747	$750,994
2015	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.705	$708,485
2016	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.665	$668,382
2017	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.627	$630,549
2018	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.592	$594,858
2019	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.558	$561,187
2020	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.527	$529,421
2021	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.497	$499,454
2022	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.469	$471,183
2023	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.442	$444,512
2024	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.417	$419,351
2025	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.394	$395,615
2026	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.371	$373,221
2027	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.350	$352,096

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San Francisquito Creek Flood Protection and Ecosystem Restoration Capital Improvement Project

Year		Measure of Benefit						Without Project	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Type of Benefit	Measure of Benefit	Without Project	With Project	Change Resulting from Project	Unit $ Value	Annual $ Value	Discount Factor	Discounted Benefits
2028	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.331	$332,166
2029	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.312	$313,364
2030	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.294	$295,626
2031	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.278	$278,893
2032	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.262	$263,106
2033	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.247	$248,213
2034	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.233	$234,164
2035	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.220	$220,909
2036	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.207	$208,405
2037	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.196	$196,608
2038	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.185	$185,480
2039	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.174	$174,981
2040	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.164	$165,076
2041	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.155	$155,732
2042	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.146	$146,917
2043	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.138	$138,601
2044	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.130	$130,756
2045	Habitat	acres	0	20.1	20.1	$50,000	$1,005,000	0.123	$123,354

DWR Table 19: Water Quality and Other Expected Benefits
San Francisquito Creek Flood Protection and Ecosystem Restoration Capital Improvement Project

Year		Measure of Benefit						Without Project	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Type of Benefit	Measure of Benefit	Without Project	With Project	Change Resulting from Project	Unit $ Value	Annual $ Value	Discount Factor	Discounted Benefits
	creation								
2046	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.116	$116,372
2047	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.109	$109,785
2048	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.103	$103,571
2049	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.097	$97,708
2050	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.092	$92,178
2051	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.087	$86,960
2052	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.082	$82,038
2053	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.077	$77,394
2054	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.073	$73,013
2055	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.069	$68,880
2056	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.065	$64,982
2057	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.061	$61,303
2058	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.058	$57,833
2059	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.054	$54,560
2060	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.051	$51,472
2061	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.048	$48,558
2062	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.046	$45,809

DWR Table 19: Water Quality and Other Expected Benefits
San Francisquito Creek Flood Protection and Ecosystem Restoration Capital Improvement Project

Year		Measure of Benefit						Without Project	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Type of Benefit	Measure of Benefit	Without Project	With Project	Change Resulting from Project	Unit $ Value	Annual $ Value	Discount Factor	Discounted Benefits
2063	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.043	$43,216
2064	Habitat creation	acres	0	20.1	20.1	$50,000	$1,005,000	0.041	$40,770
Project Life	50 Years							…	
Total Present Value of Discounted Benefits Based on Unit Value									**$14,227,936**
(Sum of the values in Column (j) for all Benefits shown in table)									
Transfer to Table 20, column (f), Exhibit F: Proposal Costs and Benefits Summaries									
Comments:									